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# Debian Linux Desktop System Notes David Childers



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[illegible]

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Greetings,

The loss of Windows 2000 was the straw that broke the camels back for me and my Love / Hate relationship with Microsoft ©. I was determined to find an operating system that offered the ease of use and flexibility of Windows but focused on the Open Source philosophy. I was fortunate to find that with Debian Linux.

Over the years, I amassed a collection of notes to help me manage the various systems that I administer. I wanted to pass this compilation forward and help others in their quest for optimizing their Debian desktop system.

It is my hope that you can make the most of these notes so that you can maximize your Debian Linux potential.

David Childers

[www.linkedin.com/pub/david-childers/4/736/72a](http://www.linkedin.com/pub/david-childers/4/736/72a)

The Grand Master  
of Digital Disaster

Mult prea frumos, mult prea tanar, mult prea devreme. te iubim si iti ducem dorul Elena.



Yesterday is but today's memory, and tomorrow is today's dream.

Khalil Gibran

[illegible]

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[illegible]



## **Introduction**

Debian is a Unix-like Linux distribution that can be used both as a desktop or a server based computer. Both the kernel, architecture and core modules are routinely updated. Both the system architecture and operation are extremely stable. The Debian Linux project provides access to a wealth of free / Open Source software applications that can be used for both commercial and personal use. Debian is the most popular Linux distribution and is the foundation for other Linux distributions such as Ubuntu and Mint.

Debian can be easily installed and configured to run on older computer platforms without the need for hardware upgrades, unlike other closed source operating system. It can be used in a variety of technical and non-technical environments, as well as for personal or business use.

[illegible]

## Directory Structure

A description of the hierarchy specified in the File system Hierarchy Standard.

/bin/

Essential command executable (binaries) for all users. (e.g., cat, ls, cp)  
(Especially files required to boot or rescue the system.)

/boot/

Boot loader, kernels and initrd files.

/dev/

Devices files. (e.g., /dev/null)

/etc/

Host-specific system-wide configuration files. (From et cetera.)

/home/

User home directories.

/lib/

Libraries essential for the binaries in /bin/ and /sbin/.  
(library required to boot or rescue the system.)

/lost+found/

Some files and fragment that were "recovered" during the previous fsck. (Not part of FHS.)

/mnt/

Temporarily mounted filesystems.

/media/

Mount points for removable media such as CD-ROM or USB. (appeared in FHS-2.3.)

/opt/

Add-on application software packages.  
(Pre-compiled, non ".deb" binary distribution goes here.)

\* /opt/bin/ : Same as for top-level hierarchy.

\* /opt/include/ : Same as for top-level hierarchy.

\* /opt/lib/ : Same as for top-level hierarchy.

\* /opt/sbin/ : Same as for top-level hierarchy.

\* /opt/share/ : Same as for top-level hierarchy.

/proc/

Virtual filesystem documenting kernel and process status, mostly text files.  
(e.g., uptime, network.)

/root/

Home directory for the root user.

/sbin/

System administrative binaries (e.g., init, route, ifup.) (System binaries.)  
(Files required to boot or rescue the system.)

/tmp/

Temporary files.

/selinux/

SE-Linux runtime settings. (Not part of FHS.)

/srv/

Site-specific data which is served by the system. (Not part of FHS.)

/sys/

The filesystem for exporting kernel objects.  
(Many /proc/\* files should have been here...)

/usr/

Secondary hierarchy for shareable, read-only data.  
(Formerly from UNIX source repository, now from UNIX system resources.)  
(Files that are not-required to boot or rescue the system.)

\*/usr/bin/ : Same as for top-level hierarchy.

\*/usr/include/ : Standard include files.

\*/usr/lib/ : Same as for top-level hierarchy.

\*/usr/sbin/ : Same as for top-level hierarchy.

\*/usr/share/ : Architecture-independent (shared) data.

\*/usr/src/ : Source code (to build debian packages. See also /usr/local/src/)

\*/usr/X11R6/ : X Window System, Version 11 Release 6.

\*/usr/local/ : Tertiary hierarchy for local data installed by the system administrator.

\* /usr/local/bin : locally compiled binaries, local shell script, etc..

\* /usr/local/src : Source code (Place where to extract and build non debian stuff.)

/var/

Variable data, such as logs, databases, websites, and temporary spool (e-mail.) files.

<http://wiki.debian.org/FilesystemHierarchyStandard>

**Linux executable files are typically located in /usr/bin/ directory.**

[illegible]

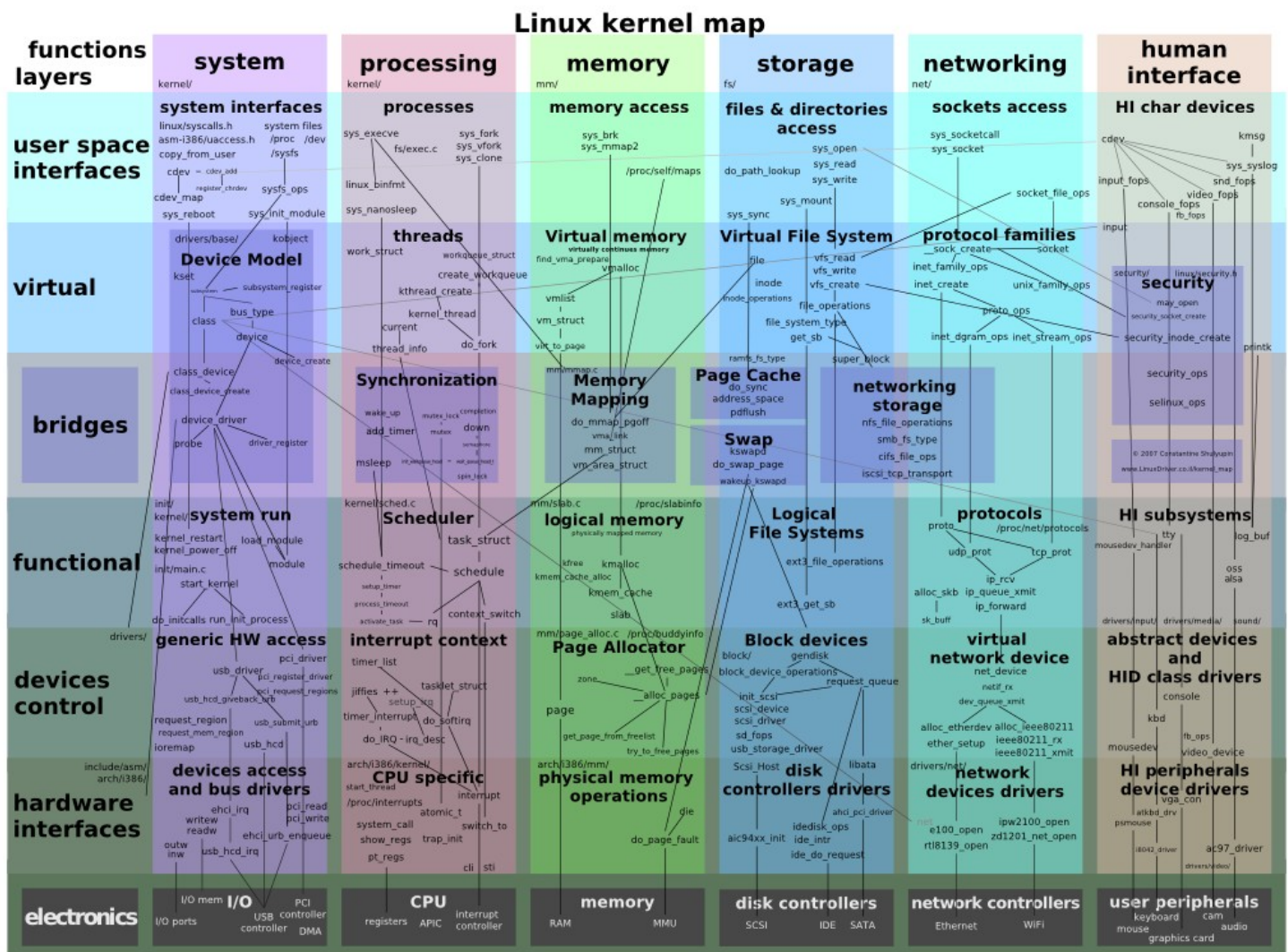
# Linux Kernel

The Linux kernel is a monolithic kernel, supporting true preemptive multitasking (both in user mode and, since the 2.6 series, in kernel mode), virtual memory, shared libraries, demand loading, shared copy-on-write executables (via KSM), memory management, the Internet protocol suite, and threading.

Device drivers and kernel extensions run in kernel space, with full access to the hardware, although some exceptions run in user space, for example file systems based on FUSE/CUSE, and parts of UIO. The graphics system most people use with Linux does not run within the kernel, in contrast to that found in Microsoft Windows. Unlike standard monolithic kernels, device drivers are easily configured as modules, and loaded or unloaded while the system is running. Also, unlike standard monolithic kernels, device drivers can be pre-empted under certain conditions; this feature was added to handle hardware interrupts correctly, and to better support symmetric multiprocessing. By choice, the Linux kernel has no binary kernel interface.

The hardware is also incorporated into the file hierarchy. Device drivers interface to user applications via an entry in the `/dev` or `/sys` directories. Process information as well is mapped to the file system through the `/proc` directory.

[https://en.wikipedia.org/wiki/Linux\\_kernel](https://en.wikipedia.org/wiki/Linux_kernel)



[https://commons.wikimedia.org/wiki/File:Linux\\_kernel\\_map.png](https://commons.wikimedia.org/wiki/File:Linux_kernel_map.png)

[illegible]



## Basic Linux Commands

List all files in a directory.

ls

List all files in a directory.

ls

List all hidden files in a directory.

ls -a

Change directory.

cd

**cd directory-name**

Change access permissions to a file.

chmod

**chmod ### file-name**

Owner is the first number in chmod command.  
Group is the second number in chmod command.  
Other is the third number in chmod command.

	Owner	Group	Other
Read	4	4	4
Write	6	6	6
Execute	7	7	7

Download a file from the Internet.

wget

**wget web address of file and file name**

Create a directory.

mkdir

**mkdir test**

Remove a specific directory.

rmdir

**rmdir test**

Remove a specific file.

rm

**rm test.txt**

Displays a list of previous terminal commands.

history

**history**

Find a specific file.	<code>find</code>
Search for specific name.	<b><code>find -name file-name.file-type</code></b>
Search for specific file with any file type extension.	<b><code>find -name file-name.*</code></b>
Search specific directory for specific file.	<b><code>find ./directory-name -name file-name.file-type</code></b>
Use <code>-iname</code> to ignore capital letters for specific file search.	<b><code>find ./directory-name -iname file-name.file-type</code></b>
Search entire home directory for for specific file.	<b><code>find /home -iname file-name.file-type</code></b>
List man page for specific command	<code>man</code>
	<b><code>man command-name</code></b>

<https://www.debian.org/doc/manuals/user/ch6.html>

## The Linux Command Line

Written by William Shotts

Free Creative Commons PDF download.

<http://www.linuxcommand.org/tlcl.php>

[illegible]

## **Apt-Get Commands**

apt-get is a tool used for automatic software package management. This includes updating a Debian machine, retrieving software packages, and installing Debian packages/programs.

### **apt-get install (package name)**

Install software package.

### **apt-get -f install**

Fix broken install.

### **apt-get install ( package name #1) ( package name #2) ( package name #3)**

Install multiple packages.

### **apt-get remove ( package name)**

Remove software package.

### **apt-get autoremove ( package name)**

Remove packages that were automatically installed to satisfy dependencies and are no longer needed.

### **apt-get --purge remove (package name)**

Remove package AND configuration file.

### **apt-get update**

Updates the list of available packages and their versions (from repositories).

### **apt-get upgrade**

Upgrades without regards to dependencies. no additional packages are installed or removed.

### **apt-get dist-upgrade**

Upgrade ensures that all dependencies are resolved.

### **sudo apt-get check**

Update package cache and checks for broken dependencies.

**apt-get clean**

Clean disk space by cleaning retrieved .deb files from the local repository.

**apt-get autoclean**

Removes package files that can no longer be downloaded, and are largely useless.

**apt-cache search (package name)**

Find out the package name and information regarding it.

**apt-cache show (package name)**

Display package information and short description.

**apt-cache showpkg (package name)**

Check dependencies for software package.

**apt-cache pkgnames**

List all the available packages.

<http://wiki.debian.org/DebianPackageManagement>

[illegible]

## System Update

### Update Debian system

Shell script to update Debian system.

- Create a document.
- Copy the update shell script text to the document.
- Rename the document to update.sh.
- Make the shell script file executable.

### Update Shell Script

---

```
#!/bin/sh
```

```
# Updates the list of available packages and their versions (from repositories).  
apt-get update
```

```
# Upgrade ensures that all dependencies are resolved.  
apt-get dist-upgrade
```

```
# Removes package files that can no longer be downloaded, and are largely useless.  
apt-get autoclean
```

---

Execute the update shell script with the following command: **./update.sh**  
(The period in front of the forward slash is part of the command.)

[illegible]



## Desktop Tweaks

### Configure software applications to start when Mate Desktop launches

- System tab.
- Control center.
- Startup applications.

### Create desktop launcher to execute/ run script

```
[Desktop Entry]
Encoding=UTF-8
Name=System Update
Comment=System Update
Exec=/home/saint/Scripts/monitor
Icon=/home/saint/Scripts/monitor.png
Type=Application
Terminal=False
Categories=Application;
```

Change the sections that are **bold face** to the appropriate settings.

### Note

- Use **Terminal=false** if a terminal display is not needed.

<http://askubuntu.com/questions/536994/starting-a-script-in-a-desktop-icon>

<http://askubuntu.com/questions/436891/create-a-desktop-file-that-opens-and-execute-a-command-in-a-terminal>

## Launch web browser from the terminal

This command opens the default browser, then opens a specified URL when the web browser launches.

**x-www-browser http://some-url.org**

<https://askubuntu.com/questions/8252/how-to-launch-default-web-browser-from-the-terminal>

## Example

- Create desktop launcher.
- Use this command in the launcher to open Firefox and then open the online Skype application.

**firefox-esr %u https://login.skype.com/login**

## Note

Change web browser command if you prefer to launch another web browser.

Change URL location per your requirements.



- Associate this icon with the launcher.
- Label the launcher Skype online.

<http://www.clker.com/cliparts/t/4/z/V/l/P/phone-icon-th.png>

## Open terminal, execute a command, and keep the terminal application open

This will allow you to execute a command from your desktop that requires terminal access. This will keep the terminal open after the execution of the command.

### How to

- Create a text file.
- Copy this text to the txt file.

-----

**#!/bin/bash**

**\$@**

**/bin/bash**

-----

- Save the txt file.
- Rename the txt file to Helper.Script.sh
- Change the permissions of the file and make it executable.

**chmod 755 Helper.Script.sh**

This script should be called from your panel/menu launcher using a command structure that will launch your terminal emulator, then call on this shell script, and then provide an argument that is taken in by this script (“\$1” or \$@); this argument tells the script which command to run (for instance: nmap -help).

**SYNTAX: [command] [path/to/Helper.Script.sh] [argument]**

### Note

When launching the script from your panel or menu.

- The word “USER” should be changed to your own username.
- Change “nmap -help” to whatever command is specific to your needs.
- Make sure that Helper.Script.sh is executable. (chmod 755 Helper.Script.sh)
- You must reference the directory location of the Helper.Script.sh
- The command you should use in your panel/ menu launcher is as follows.

Launch with mate-terminal

**mate-terminal -x /home/USER/Helper.Script.sh nmap --help**

Launch with xterm

**xterm -e /home/USER/Helper.Script.sh nmap --help**

Launch with terminator

**terminator -x /home/USER/Helper.Script.sh nmap --help**

Note

-x and -e are the flags for “execute”, depending on which terminal you are using.

/bin/bash tells the terminal to keep a bash shell open and running at the bottom of the script.

Example

- Create desktop launcher.

- Use this command in the launcher to open the Helper.Script.sh file and then execute the command

**mate-terminal -x /home/saint/Scripts/Helper.Script.sh speedtest**

Note

Remember to include the directory where the Helper.Script.sh is located - /home/saint/Scripts/.

Remember to change the command to your specific needs.



- Associate this icon with the launcher.

- Label the launcher Speed Test.

<http://icons.iconarchive.com/icons/icons8/ios7/128/Sports-Running-icon.png>

## Helper.Script.sh

```
-----  
#!/bin/bash  
#  
# THIS PROGRAM WILL: Open the terminal, execute a command, and keep the terminal open.  
# The intention is that you call this script from a menu launcher and include an argument in your  
# command. (SEE BELOW)  
#  
# Darrin Goodman (http://www.hilltopyodeler.com/blog) > hilltopyodeler@gmail.com  
# Credit is due to 13u11fr09 through his/her thread at  
# http://ubuntuforums.org/archive/index.php/t-296628.html  
# Go to the link above for more ideas and philosophies on this subject.  
#  
# This script should be called from your panel/menu launcher using a command structure  
# that will launch your terminal emulator, then call on this shell script, and then provide  
# an argument that is taken in by this script ("$1" or $@); this argument tells the script  
# which command to run (for instance: nmap --help).  
# SYNTAX: [command] [path/to/helperScript.sh] [argument]  
#  
# PLEASE NOTE THAT:  
#   - "USER" SHOULD BE CHANGED TO YOUR OWN USERNAME BELOW  
#   - CHANGE "nmap --help" TO WHATEVER IS SPECIFIC TO YOUR NEEDS.  
#   - MAKE SURE THAT helperScript.sh IS EXECUTABLE (chmod 755 helperScript.sh)  
#  
# The command you should use in your panel/menu launcher is as follows.  
# For gnome-terminal, use: gnome-terminal -x /home/USER/helperScript.sh nmap --help  
# For xterm, use: xterm -e /home/USER/helperScript.sh nmap --help  
# For Terminator, use: terminator -x /home/USER/helperScript.sh nmap --help  
# [-x] and [-e] are the flags for "execute".  
#   Note: for some reason, "terminator -x" will launch some things in Terminator,  
#   but not others; not sure why at this time.  
#  
# The reference below to /bin/bash tells the terminal to keep a bash shell open and running.  
$@  
/bin/bash  
-----
```

[illegible]

## Hard Drives

FSTAB (File Systems Table)

FSTAB **/etc/fstab** is a system configuration file that lists all available disks and disk partitions. It also indicates how they are to be integrated into the overall system's file system.

<http://wiki.debian.org/fstab>

**Data contained in FSTAB MUST MATCH data for all attached memory devices.**

The lsblk command lists information about available block devices.

- **su** (Login to root.)

- **lsblk --output NAME,FSTYPE,LABEL,UUID,MODE**

<b>NAME</b>	System device name.	<b>LABEL</b>	Label of device.	<b>MODE</b>	Mode (Device permissions).
<b>FSTYPE</b>	File type of device.	<b>UUID</b>	Universal Unique Identifier.		

Example output display

```
root@saint:/home/saint# lsblk --output NAME,FSTYPE,LABEL,UUID,MODE
```

NAME	FSTYPE	LABEL	UUID	MODE
sda				brw-rw----
└sda1	ext4	8a278609-8700-4cdb-bb81-a51362332626		brw-rw----
└sda2				brw-rw----
└sda5	swap	c05cb757-ef28-49a9-bbc6-46f3afda7302		brw-rw----
sdb	ext4	cbe105d5-aedf-49c7-9e3d-de584e07a7d5		brw-rw----
sr0				

sda - Primary hard drive.      sdb - Secondary hard drive.      sr0 - cdrom drive

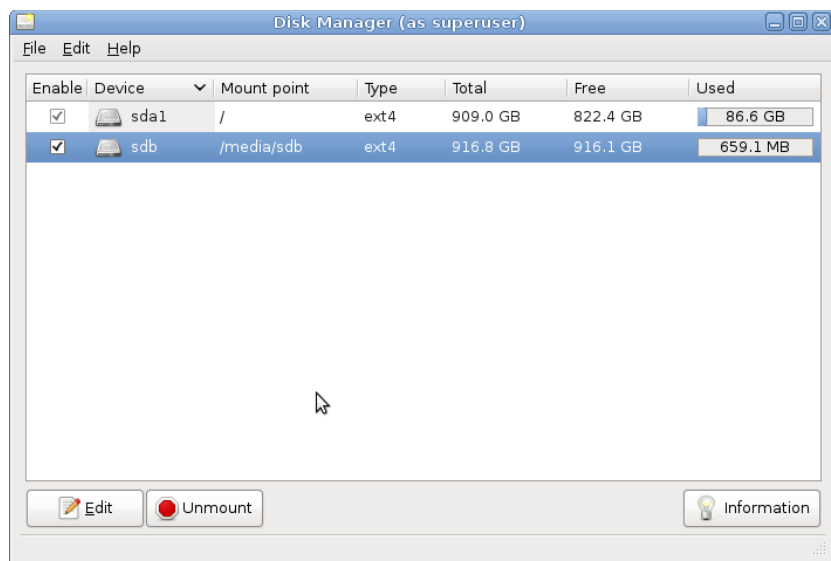
Gedit or nano can be used to read or edit the FSTAB configuration file

- **su** (Login to root.)

- **gedit /etc/fstab**

- **nano /etc/fstab**

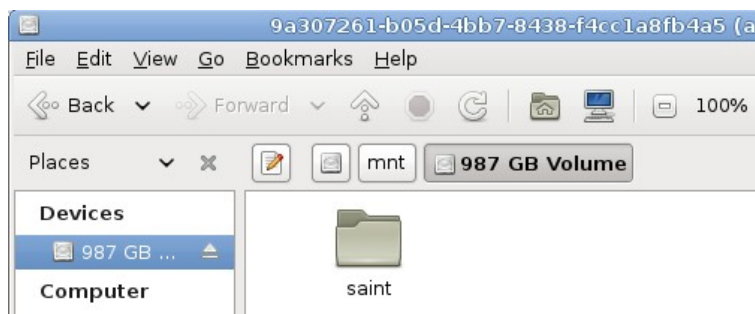
## Configure additional internal hard drive disk for automount



disk-manager software must be installed.

1. Click on Enable for each Hard Drive that needs to be auto mounted on boot.
2. Ensure there is a Check Mark in front of the device.
3. Click on File in upper left hand corner.
4. Click on Save.
5. Exit.

## Configure secondary hard drive permissions



1. **su** (Login to root.)
2. **dbus-launch caja** (Launch file manager.)
3. Click on hard drive under devices.
4. Right click on volume.
5. Click on properties.
6. Click on permission in popup box.
7. Select user name for owner, group, others.
8. Select create and delete files under folder access.
9. Click apply permissions to enclosed files tab.

<http://ubuntuforums.org/showthread.php?t=1336768>



## Desktop launcher for remote network file location (Network Hard Drive)



**desktop  
icon**

<http://free-icon-download.com/modules/PDdownloads/images/screenshots/free-computer-hard-drive-clipart-harddisk-6.png>

### **Launcher command**

caja smb://192.168.1.105/share/

|       |       |  
|       |       | Network address

|       |       |  
|       |       | SMB protocol

|       |       |  
|       |       | File manager application

\* Right click on image

- Save graphic to computer desktop.
- Name graphic drive.png.

[illegible]

## Debian Repository

### Debian system repository source list

The source list file is located here on the system: `/etc/apt/sources.list`

### Remove **Debian CD** from repository source

```
# deb cdrom:[Debian GNU/Linux 8.0.0 _Jessie_ - Official amd64 CD Binary-1 20150425-12:54]/  
jessie main
```

### Debian repository information

<http://wiki.debian.org/SourcesList>

### Generate a custom Debian source list

<http://debgen.simplylinux.ch/>

### Add **contrib non-free** after **main** in the Source List

(This will allow users to have access to contrib and non-free components.)

```
deb http://httpredir.debian.org/debian jessie main contrib non-free  
deb-src http://httpredir.debian.org/debian jessie main contrib non-free
```

```
deb http://httpredir.debian.org/debian jessie-updates main contrib non-free  
deb-src http://httpredir.debian.org/debian jessie-updates main contrib non-free
```

[illegible]

## Network Support

List all ip addresses of attached devices on local network using apr-scan

**su** (Login to root.)

wired: **arp-scan --interface=eth0 --localnet**

OR

**su** (Login to root.)

wireless: **arp-scan --interface=wlan0 --localnet**

Display a list of installed hardware, including network cards

**lspci -vq**

### Please Note:

The list of installed hardware may be long, depending on the amount of hardware that is installed. You must be search through the list and identify either the network controller or ethernet controller, depending on the network hardware information that is needed.

Example output display

03:00.0 Ethernet controller: Broadcom Corporation NetXtreme BCM5754 Gigabit Ethernet PCI Express (rev 02)

Subsystem: Dell OptiPlex 745

Flags: bus master, fast devsel, latency 0, IRQ 45

Memory at ddef0000 (64-bit, non-prefetchable) [size=64K]

Expansion ROM at <ignored> [disabled]

Capabilities: <access denied>

Kernel driver in use: tg3

04:00.0 Network controller: Qualcomm Atheros AR9227 Wireless Network Adapter (rev 01)

Subsystem: Qualcomm Atheros Device 0301

Flags: bus master, 66MHz, medium devsel, latency 168, IRQ 16

Memory at dddf0000 (32-bit, non-prefetchable) [size=64K]

Capabilities: <access denied>

Kernel driver in use: ath9k

## Install a script to test network speed using command line

- Login to root.

**su**

- Download this script.

**wget https://raw.githubusercontent.com/sivel/speedtest-cli/master/speedtest\_cli.py**

- Make the script executable.

**chmod a+rx speedtest\_cli.py**

- Move the speedtest\_cli.py script to the /usr/bin directory.

**mv speedtest\_cli.py /usr/local/bin/speedtest**

- Set the user and group of speedtest to root.

**chown root:root /usr/local/bin/speedtest**

- Terminal command to test the computer connection speed.

**speedtest**

## Example output display

```
Retrieving speedtest.net configuration...
Retrieving speedtest.net server list...
Testing from XFINITY (89.146.163.25)...
Selecting best server based on latency...
Hosted by Darby by TRQ (Thomasville, AL) [72.14 km]: 61.3 ms
Testing download speed.....
Download: 18.15 Mbit/s
Testing upload speed.....
Upload: 11.18 Mbit/s
```

<http://www.shellhacks.com/en/HowTo-TEST-Internet-Speed-via-Linux-Command-Line>

## Adjust network MTU for slow Wifi connection

- |  |  |
|--|--|
| (1) - Click on system tab on panel.      | (5) - Click on the edit button.                                |
| (2) - Click on control center tab.       | (6) - Click on Wifi tab in box.                                |
| (3) - Click on network connections icon. | (7) - Change MTU from automatic to <b>XXX</b><br>(Bottom tab). |
| (4) - Select Wifi connection in box.     |  |

<http://www.systutorials.com/3767/smaller-mtu-faster-wifi-linux/>

**Adjust the MTU number XXX to the appropriate setting for maximum throughput.**

[illegible]

## **Printer Support**

### System printing

<http://wiki.debian.org/SystemPrinting>

### Cups printer control

<http://localhost:631/admin>

### Login to Cups

User name → Root

Pass word → Administrator password

### Repository of printer drivers for Linux and Unix

<http://www.openprinting.org/drivers>

### PPD printer device files

These device drive files are located here on the system → `/etc/cups/ppd`



[illegible]

## Password Security

A computer access password functions as the primary means of preventing unauthorized access to a computer. Passwords are essential for providing physical security for a computer system. The use of easy passwords is typically the weakest link in a computer systems security and is the equivalent of not using any password protection.

It is important to select strong passwords for both the ADMINISTRATOR / ROOT in addition to the USER login. This password should contain a minimum of twelve characters. The password should consist of at least two upper case letters, two lower case letters, two numbers and two special characters.

### **DO NOT use identical passwords for system login.**

- Use a different login password for both the ADMINISTRATOR / ROOT and the USER Login.
- Establish a set routine for changing ALL system passwords on a regular basis.
- ADMINISTRATOR / ROOT and the USER password should be changed on a regular basis.
- **DO NOT POST COMPUTER SYSTEM ACCESS PASSWORDS ON THE COMPUTER.**
- **MAINTAIN PHYSICAL SECURITY** of all access password information.

Debian provides a software package within their repository that can be installed and configured to generate a security conscious password. (apg package.)

### Check the security of passwords online

<http://www.passwordmeter.com/>

<http://www.my1login.com/resources/password-strength-test/>

<http://password-checker.online-domain-tools.com/>

<http://www.yetanotherpasswordmeter.com/>

[illegible]

## Sudo

Sudo is a program designed to let system administrators allow some users to execute some commands as root. The basic philosophy is to give as few privileges as possible but still allow people to get their work done.

Using sudo is safer than opening a session as root for a number of reasons.

Non system administrators do not need to know the root password (sudo prompts for entering the the current user's password).

Using sudo allows work to be done as an unprivileged user, which reduces the potential for damage that mistakes can cause.

**A user must belong to group=sudo for that user to be able to use sudo.**

### Adding people to sudo group

- Login to root.

**su**

- Add a user to the sudo group.

**adduser [user\_login\_id] sudo**

- Verify that a user is a member of the sudo group.

**groups [user\_login\_id]**

### Manually edit sudo configuration file

- Login to root.

**su**

- Edit sudo file with this command.

**visudo**

<http://wiki.debian.org/sudo>

The sudo command is followed by the command you are attempting to run.

**sudo [command name]**

**The user will be prompted to enter their user personal account password after the sudo command has been initiated.**

**Each command or string of commands that needs to be run as root must be preceded by sudo.**

[illegible]

## Software Installation

Install a Debian package via command line

**dpkg -i deb\_package\_name**

Remove a Debian package via command line

**dpkg -r deb\_package\_name**

Clear out broken packages in installation

**aptitude -f**

Fix a package install

**apt-get -f install**

Detailed information about a package

**apt-cache show package\_name**

Install Deb file with GUI

**gdebi-gtk**

Completely remove package and associated files

**apt-get purge deb\_package\_name**

Install multiple packages

**apt-get install package1 package2 package3**

GUI for installing / remove installed software packages

**gpk-application**

Display information about specific software and/or command line options

**man application\_name**

[illegible]

## Software List

### Desktop

mate-desktop-environment-extras (Mate desktop with extras.)

Mate Desktop is a derivative of the old Gnome 2 Desktop. It provides ease of use with system flexibility. It also provides full functionality with low system resource consumption.

lightdm-gtk-greeter-settings (A simple configuration utility for the LightDM Display Manager.)

→ Download from the web and manually install.

<http://packages.debian.org/stretch/lightdm-gtk-greeter-settings>

numlockx (Enable NumLock in X11 sessions.)

Enable computer to automatically enable number lock on boot-up

- Edit the LightDM configuration file, `"/etc/lightdm/lightdm.conf"`,
- **su** (Login to root.)
- **gedit /etc/lightdm/lightdm.conf**
- Add the following line under the **[SeatDefaults]** section heading:

**greeter-setup-script=/usr/bin/numlockx on**

<http://www.linuxquestions.org/questions/debian-26/howto-debian-7-wheezy-lxde-auto-numlock-both-before-and-after-login-4175500323/>

Debian Wallpaper / Icons

<http://www.debian-art.org/>



## Additional screen saver packages

xscreensaver-gl

xscreensaver-gl-extra

xscreensaver-data-extra

## Configuring additional screensavers with mate

After installing additional screensavers you must enable them.

- Go to screensavers directory:
- **cd /usr/share/applications/screensavers**
- Edit the .desktop files by replacing the line.
- **OnlyShowIn=GNOME;**
- With this line.
- **OnlyShowIn=GNOME;MATE;**
- Use the sed tool to edit all files at once instead of changing each file manually.
- **find . -name '\*.desktop' | xargs sed -i 's/OnlyShowIn=GNOME;/OnlyShowIn=GNOME;MATE;/'**

You are now able to use all the new screensavers you have just installed.

<http://greyblake.com/blog/2013/02/02/install-more-screensavers-on-mate-desktop/>

## System Hardware

firmware-linux (Binary firmware for various drivers in the Linux kernel.)

lsb (Linux Standard Base.)

### Graphic card video drivers

<http://wiki.debian.org/GraphicsCard>

### Wireless networking

<http://wiki.debian.org/WiFi>

## Desktop Applications

vlc (Multimedia player and streamer.)

vlc-plugin-samba (Adds support to access Samba shares for vlc.)

audacity (Audio editor.)

openshot (Video editor.)

cheese (Tool to take pictures and videos from your webcam.)

### Skype

<http://wiki.debian.org/skype>

### Online Skype client

<http://login.skype.com/>

hexchat (IRC client for X based on X-Chat 2.)

pidgin (Graphical multi-protocol instant messaging.)

### Telegram

This is a messaging app with a focus on speed and security.

<http://www.telegram.org/>

transmission (Torrent client.)

filezilla (Graphical FTP / FTPS / SFTP client.)

xsane (GUI for sane - scanner access now easy.)

> unetbootin (Cross-platform utility used to create live USB systems.)

<http://www.vivaolinux.com.br/topico/Debian/Instalar-Unetbootin-Debian-8-Jessie>

brasero (CD/DVD burning application.)

hplip-gui (GUI utilities for Hewlett Packard Linux printing and imaging.)

## Web Browsers

> Opera (Web browser.)

<http://wiki.debian.org/Opera>

> Vivaldi (Web browser that is compatible with Chrome extensions and plug-ins.)

<http://www.vivaldi.net/>

pepperflashplugin-nonfree (Flash player maintained by Google – for Chrome / Vivaldi only.)

### Full HTML 5 codec support for Vivaldi web browser

Download Ubuntu chromium-codecs-ffmpeg-extra Debian package.

(<http://packages.ubuntu.com/search?keywords=chromium-codecs-ffmpeg-extra>)

- Delete the current libffmpeg.so file from the installed Vivaldi software /opt/vivaldi/lib/.
- Unpack the Ubuntu chromium-codecs-ffmpeg-extra package.
- Copy libffmpeg.so from /usr/lib/chromium-browser/libs/ - in the chromium-codecs-ffmpeg-extra.
- Place the extracted libffmpeg.so (from chromium-codecs-ffmpeg-extra) into /opt/vivaldi/lib/.

(Add-ons for Web Browsers)

- Forecastfox (fix version) (Weather.)
- Multi Web Search (Research the Web on different search engines displayed on one page.)
- Saved Password Editor (Create and edit entries in the password manager.)
- https everywhere (Encrypts internet communications with many major websites.)
- NoScript (Control active content on websites.)
- Adblock Plus (Blocks annoying advertisements on the web.)
- Privacy Badger (Blocks invisible trackers and advertisements that spy.)
- Bamboo Feed Reader (Similar to old Google Reader. Read RSS feeds from web sites.)

icedtea-plugin (Plug-in to execute Java.)

## System Applications

xchm (Viewer for Compiled HTML Help - CHM files.)

pavucontrol (Volume control tool [mixer] for the pulseaudio sound server.)

gnome-packagekit (Software management.)

unrar (Un-archiver for .rar files.)

wavemon (Wireless device monitoring.)

laptop-mode-tools (Power savings tools for laptop operation.)

hardinfo (Displays hardware system information.)

gedit (GNOME text editor.)

arp-scan (Identify IP hosts on local network.)

smbclient (Utilities for accessing Microsoft windows and samba servers.)

gnome-disk-utility (Tool to manage disk drives and media.)

gnome-commander (Two pane - graphical file manager.)

gparted (Hard drive partition editor.)

disk-manager (Simple file system configurator.)

smartmontools (Control and monitor storage systems using S.M.A.R.T..)

ntp (Network Time Protocol.)

FFmpeg is a set of tools for transcoding, streaming and playing of multimedia files

### Notes for FFmpeg

- Remove old ffmpeg binary packages in /usr/bin/.
- Place new ffmpeg binary packages in /usr/bin/.
- Chmod +x ffmpeg binary packages to executable.

### Static builds of FFmpeg for Linux

<http://johnvansickle.com/ffmpeg/>

fbreader (Simple e-book reader.)

calibre (A complete e-library solution.)

pdfsam (PDF split and merge.)

pdfmod (Simple tool for modifying PDF documents.)

pdftk [ command line ] (Tool for manipulating PDF documents.)

PDF Edit (Edit PDF documents.)

<http://sourceforge.net/projects/pdftedit/>

Master PDF Editor (This software provides advanced functions for working with PDF format.)

**This free version can be used only in non-commercial purposes.**

<http://code-industry.net/free-pdf-editor/>

playonlinux (GUI front-end for wine which allows installation of windows software on Linux.)

gnucash (Personal and small-business financial-accounting software.)

## LibreOffice

### LibreOffice Debian Packages

#### English thesaurus Add-On

myspell-en-us

#### Library of license-free images Add-On

openclipart-libreoffice

#### Additional font packages

ttf-dejavu

texlive-fonts-extra

ttf-mscorefonts-installer

ttf-bitstream-vera

ttf-liberation

#### Additional fonts

<http://fonts.debian.net/>

LibreOffice accesses fonts here on the system:  
→ /usr/share/fonts/

### Advanced Dictionary and Thesaurus

<http://extensions.libreoffice.org/extension-center/english-dictionaries>

### Language tool

This extension detects spelling and grammar errors.

<http://www.languagetool.org/>

### Scribens

This extension detects spelling and grammar errors.

<http://www.scribens.com/>

### Grammarly

This online program detects poor grammar, highlights the errors, and suggests improvements. (Similar to the commercial Grammarly online service.)

<http://www.grammarly.org>

[illegible]



## Command Line Weather Script

Install the latest version of curl

**sudo apt-get install curl**

Command

This command will retrieve the weather information based on the computer ip address.

**curl wttr.in**

<http://www.maketecheasier.com/weather-details-linux-command-line>

How can I make a script that opens terminal windows and executes commands in them

**-e command\_syntax**

<http://askubuntu.com/questions/46627/how-can-i-make-a-script-that-opens-terminal-windows-and-executes-commands-in-the>

Leave XTerm open after task is complete

**-hold**

<http://superuser.com/questions/363614/leave-xterm-open-after-task-is-complete>

Start XTerm window maximized

**-maximized**

<https://superuser.com/questions/261812/start-xterm-maximized>

Start XTerm window with specific size and position

**-geometry <width>x<height>+<left to right>+<top to bottom>**

**NOTE:** The position is measured using pixel distance from left to right and top to bottom.

xterm **-geometry 126x41+0+0** -hold -e curl wttr.in

<https://stray-notes.blogspot.com/2010/07/xterm-geometry.html>

### Maximized XTerm window size

----- SCRIPT -----

```
#!/bin/bash
xterm -maximized -hold -e curl wttr.in
```

----- SCRIPT -----

OR

### Specified XTerm window size

----- SCRIPT -----

```
#!/bin/bash
xterm -geometry 126x41+0+0 -hold -e curl wttr.in
```

----- SCRIPT -----

- Create an empty text file.
- Name the empty file: weather.sh
- Copy the above script into weather.sh file.
- Save the file.
- Make the weather.sh file executable.
- Start the shell script with the command: **curl wttr.in**.  
(Create a desktop launcher using that command.)
- Close the XTerm window to kill the weather process.

[illegible]

## **System Security**

### United States Computer Emergency Readiness Team (US-CERT)

This agency is responsible for analyzing and reducing cyber threats, vulnerabilities, disseminating cyber threat warning information, and coordinating incident response activities.

<http://www.us-cert.gov/>

### Real time cyber threat map

<http://www.fireeye.com/cyber-map/threat-map.html>

<http://map.norsecorp.com>

<http://threatmap.fortiguard.com/>

<http://threatmap.checkpoint.com/ThreatPortal/livemap.html>

<http://cybermap.kaspersky.com/>

<http://community.blueliv.com/map/>

### Debian security

<http://www.debian.org/security/>

### General security software

clamtk (GUI front-end for Clamav.)

clamav-daemon (anti-virus utility for Unix - scanner daemon)

gufw (GUI for Linux firewall.)

rkhunter (Rootkit, backdoor, sniffer and exploit scanner.)

chkrootkit (Rootkit detector.)

debian-security-support (Debian security support coverage checker.)

nautilus-wipe (Secure deletion extension for Nautilus.)

apg (Automated Password Generator.)

bleachbit (Delete unnecessary files and securely delete files from system.)

gnupg (Tool for secure communication. Encrypt, Decrypt and create digital signature.)

gna (Graphical user interface for the GNU Privacy Guard - GnuPG.)

## UFW Firewall

### UFW command line basics

- Enable defaults.

**ufw default deny incoming**

**ufw default allow outgoing**

- Verify the firewall is enabled.

**ufw status verbose**

### Firewall rules

UFW denies all of the incoming connections by default. A rule must be made if there is an application that requires a network connection.

- Enabled service.

UFW reads data from /etc/services to enable services configured on the host computer.

| View the list of configured services installed on the host computer.

| **less /etc/services**

- Service connections can be specified.

**ufw allow [Name Of Service]**

(Example of service - SSH)

- Port ranges can be specified.

| Simple example for tcp:

| **ufw allow 1000:2000/tcp**

| Simple example for UDP:

| **ufw allow 1000:2000/udp**

- IP addresses can be specified.

**ufw allow from 111.222.333.444**

<https://wiki.debian.org/Uncomplicated%20Firewall%20%28ufw%29>

## Clamav

### Manually update Clamav virus application

- **su** (Login to root.)
- **freshclam**
- **/etc/init.d/clamav-freshclam stop**
- **/etc/init.d/clamav-freshclam start**

### Manually update Clamav virus signature database

- **su** (Login to root.)
- **freshclam - update virus databases**
- **/etc/init.d/clamav-freshclam stop**
- **/etc/init.d/clamav-freshclam start**

### View Clamav log

- **su** (Login to root.)
- **gedit /var/log/freshclam.log**

## AppArmor

Application Armor (AppArmor) is a Linux kernel security module that allows system administrators to restrict a programs capabilities with per-program profiles.

apparmor (User-space parser utility for AppArmor.)

apparmor-utils (Utilities for controlling AppArmor.)

apparmor-profiles (Profiles for AppArmor Security policies.)

apparmor-profiles-extra (Extra profiles for AppArmor Security policies.)

apparmor-notify (AppArmor notification system.)

### Enable AppArmor

- **perl -pi -e 's,GRUB\_CMDLINE\_LINUX="(.\*)"\$,GRUB\_CMDLINE\_LINUX="\$1 apparmor=1 security=apparmor",' /etc/default/grub**

- **update-grub**

- **reboot**

<https://wiki.debian.org/AppArmor/HowToUse>

### AppArmor Commands

**/etc/init.d/apparmor {start|stop|restart|reload|force-reload|status|recache}**

- This command controls the service itself.

**aa-status** - Displays a list of policies in use as well as which ones are in Complain or Enforce mode.

**aa-unconfined** - Displays a list of applications and services with open network ports that do not have AppArmor protection enabled.

**aa-complain application\_name** - Forces a policy for a specific application or service into Complain Mode for debugging purposes.

**aa-enforce application\_name** - Forces a policy for a specific application or service into Enforce Mode for real-time live protection.

**aa-autodep application\_name** - Generates a profile for a specific application or service. The generated profile will most likely need further tuning.

**aa-genprof application\_name** - Generates a profile or a specific application or service using aa-autodep, sets the profile to Complain mode, and writes a marker to the system log.

**aa-logprof** - Log analyzer that shows access errors and help you add new rules to a profile.

<http://forums.linuxmint.com/viewtopic.php?t=18681>

**AppArmor audit logs can be found in /var/log/syslog.**

## Veracrypt

This is an open-source freeware utility used for on-the-fly encryption.

Ciphers supported are AES, Serpent, and Twofish. Additionally, five different combinations of cascaded algorithms are also available.

<http://veracrypt.codeplex.com/>

### Veracrypt installation

- Download latest version file → example: veracrypt-1.17-setup-gui-x64.  
(<http://www.sourceforge.net/projects/veracrypt/files/>)
- Unpack file.
- Execute setup-gui file as root → `./veracrypt-1.17-setup-gui-x64`.

### Veracrypt documentation

<http://veracrypt.codeplex.com/documentation>

### Cipher descriptions

Twofish is a symmetric key block cipher with a block size of 128 bits and key sizes up to 256 bits.  
<http://en.wikipedia.org/wiki/Twofish>

Serpent is a 32-round substitution-permutation network operating on a block of four 32-bit words.  
[http://en.wikipedia.org/wiki/Serpent\\_%28cipher%29](http://en.wikipedia.org/wiki/Serpent_%28cipher%29)

AES is a subset of the Rijndael cipher and is based on a substitution-permutation network.  
[https://en.wikipedia.org/wiki/Advanced\\_Encryption\\_Standard](https://en.wikipedia.org/wiki/Advanced_Encryption_Standard)

### Security rating of ciphers

The Serpent cipher was classified as extremely secure security margin and was rendered unbreakable from a theoretical perspective.

The Twofish cipher was classified as very secure and was rendered unbreakable from a theoretical perspective.

Rijndael (also known as AES) was classified as breakable in several theoretical scenarios.



[illegible]

## Multiple Debian Package Installation Script

# Script to install multiple instances of software package applications.  
# Remove Number sign ' # ' from in front of software package to install.

apt-get install

# # # # # # # # # #	# gnome-commander
# mate-desktop-environment-extras	# gparted
# lightdm-gtk-greeter-settings	# disk-manager
# numlockx	# smartmontools
# # # # # # # # # #	# ntp
# xscreensaver-gl	# # # # # # # # # #
# xscreensaver-gl-extra	# fbreader
# xscreensaver-data-extra	# calibre
# # # # # # # # # #	# pdfsam
# firmware-linux	# pdfmod
# lsb	# pdftk
# # # # # # # # # #	# playonlinux
# vlc	# gnucash
# vlc-plugin-samba	# # # # # # # # # #
# audacity	# myspell-en-us
# openshot	# openclipart-libreoffice
# cheese	# ttf-dejavu
# hexchat	# texlive-fonts-extra
# pidgin	# ttf-mscorefonts-installer
# transmission	# ttf-bitstream-vera
# filezilla	# ttf-liberation
# xsane	# # # # # # # # # #
# brasero	# clamtk
# hplip-gui	# clamav-daemon
# # # # # # # # # #	# gufw

# icedtea-plugin  
# # # # # # # # # #  
# xchm  
# pavucontrol  
# gnome-packagekit  
# unrar  
# wavemon  
# laptop-mode-tools  
# hardinfo  
# gedit  
# arp-scan  
# smbclient  
# # # # # # # # # #  
# gnome-disk-utility

# rkhunter  
# chkrootkit  
# debian-security-support  
# nautilus-wipe  
# apg  
# bleachbit  
# gnupg  
# gpa  
# # # # # # # # # #  
# apparmor  
# apparmor-utils  
# apparmor-profiles  
# apparmor-profiles-extra  
# apparmor-notify  
# # # # # # # # # #

[illegible]

## General Information

Monitor resolution: 1280 x 720

Debian system post installation user's guide

Online guide

<http://www.debian.org/doc/manuals/debian-reference/>

Debian administrators handbook

Free PDF download

<https://www.debian-handbook.info/get/>

### Find a file in Linux

- This will find every instance of conf no matter where it is.
- The / after find tells find to look in every directory below and including the root of the file system.
- The - in front of name tells Linux to not worry about caps.

\$ find / -iname filename or partial filename (such as conf.conf)

<http://www.wikihow.com/Find-a-File-in-Linux>

### Display kernel version

\$ uname -r

### Statistics on computer hard drive life expectancy

<https://www.backblaze.com/blog/hard-drive-reliability-stats-q1-2016/>

<http://www.digitaltrends.com/computing/google-ssd-study/>

[illegible]

## XFCE

XFCE is a very lightweight and fast full featured Desktop Environment.

Debian Package : xfce4

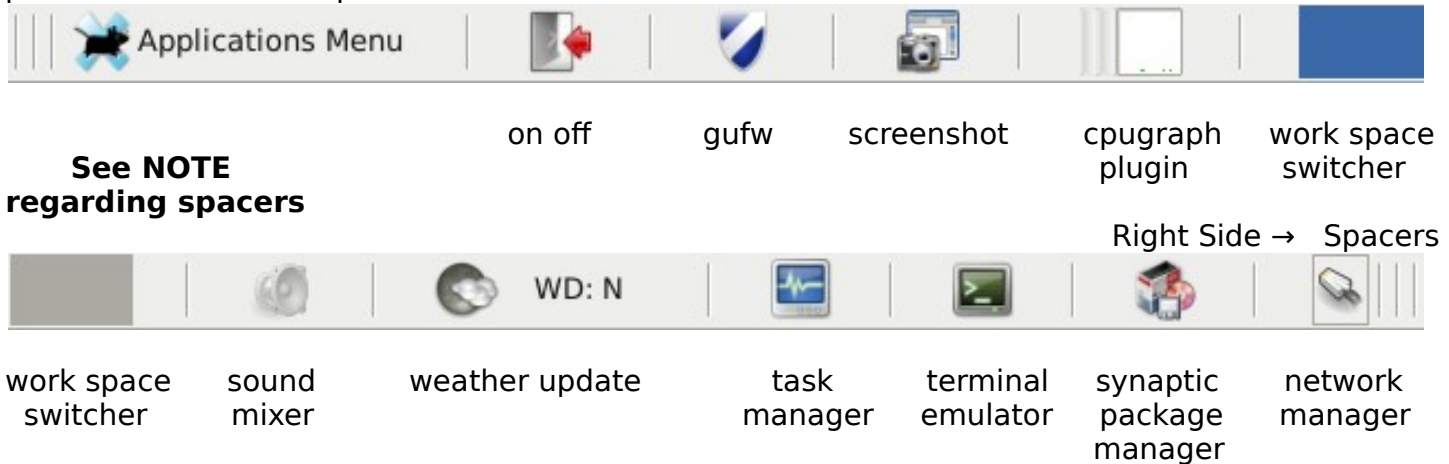
<http://wiki.debian.org/Xfce>

### Set up autostart applications

Go to → settings | settings manager | session and startup

### XFCE top panel configuration

Spacers ← Left side of panel



### XFCE bottom panel configuration

Show desktop  
Applet



Window buttons  
Applet



Date time  
Applet

### Spacing out icons on desktop panels

- Add separators between panel applications.
- Go to properties.
- Check expand.

### Software applications on desktop panel

Create software application launcher icon for the desktop - then drag desktop icon to the XFCE panel for placement.

## NOTE

Separators at the ends of the panels provide better viewing of panel applets near the edges.

[illegible]



## **Online Firewall Scanners**

Test your Internet connection for open ports and services

[http://www.check-and-secure.com/portcheck/\\_en/](http://www.check-and-secure.com/portcheck/_en/)

Check your firewall on-demand or automatically

<http://www.shieldcheck.com/>

Remotely verify if a port is open or closed

<http://www.canyouseeme.org/>

Free online network port scanner tool

<http://www.ipfingerprints.com/portscan.php>

Antivirus Live CD

This is a 4MLinux fork including the ClamAV scanner.

<http://sourceforge.net/projects/antiviruslivecd/>

[illegible]

## **Free Online Production Tools**

### Online optical character recognition

This software allows the conversion of scanned PDF documents, faxes, photographs or digital camera captured images into editable electronic documents; such as Microsoft word, Microsoft Excel, rtf, html and txt format files.

<http://www.onlineocr.net>

<http://www.free-online-ocr.com>

<http://www.newocr.com>

<http://www.i2ocr.com>

<http://www.free-ocr.com>

<http://www.ocrconvert.com>

### Online file conversion software

This software allows the conversion of textual, graphic and multimedia content into another format. (I.E. JPG to PNG or MP3 to AAC.)

<http://www.zamzar.com>

<http://www.convertio.co>

<http://www.online-convert.com>

<http://www.convertfiles.com>

<http://www.freefileconvert.com>

<http://www.docspal.com>

[illegible]